2016

INORGANICA

PADOVA

# ATTI DEL CONGRESSO

## XLIV Congresso Nazionale di Chimica Inorganica

Padova, 14 - 17 settembre


Università degli Studi di Padova

Società Chimica Italiana

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# Diazoalkane Complexes of Iron

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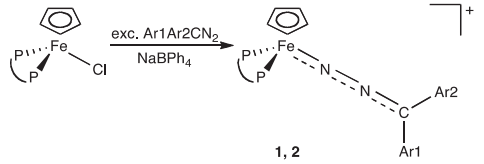
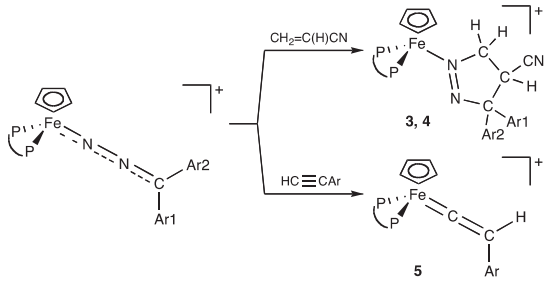
Diazoalkane complexes $[Fe(\eta^5\text{-}C_5H_5)(N_2CAr1Ar2)(P\text{–}P)]BPh_4$ (**1**, **2**) were prepared by allowing chloro compounds $FeCl(\eta^5\text{-}C_5H_5)(P\text{–}P)$ to react with $Ar1Ar2CN_2$ in the presence of $NaBPh_4$.




P–P = $Ph_2PCH_2CH_2PPh_2$ (dppe) (**1**), $Ph_2PCH_2CH_2CH_2PPh_2$ (dppp) (**2**); Ar1 = Ar2 = Ph (**a**); Ar1 = Ph, Ar2 = *p*-tolyl (**b**); Ar1Ar2 = $C_{12}H_8$ (**c**).

Treatment of diazoalkane complexes **1**, **2** with acrylonitrile give rise to (3+2) cycloaddition, affording *3H*-pyrazole derivatives $[Fe(\eta^5\text{-}C_5H_5)\text{-}\{N{=}NC(Ar1Ar2)CH(CN)CH_2\}(P\text{–}P)]BPh_4$ (**3**, **4**), whereas reaction with terminal alkyne HC≡CAr yields vinylidene derivatives $[Fe(\eta^5\text{-}C_5H_5)\{{=}C{=}C(H)Ar\}(dppe)]BPh_4$ (**5**).




The complexes were characterised spectroscopically (IR, NMR) and by X-ray crystal structure determination of $[Fe(\eta^5\text{-}C_5H_5)\{N_2C(C_{12}H_8)\}(dppe)]BPh_4$.